IN THE CLAIMS:

Claims 1-31 (Canceled)

32. (New) A method for constructing an enclosed microchannel structure comprising at least on microchannel of capillary dimension, the method comprising the steps of:

providing a substantially planar base substrate fabricated of a polymeric material having a glass transition temperature, the substantially planar base substrate having at least one substantially planar surface and having formed therein at least one microchannel of capillary dimension at the at least one substantially planar surface;

providing a substantially planar cover substrate fabricated of a polymeric material, the polymeric material of the cover substrate being similar to that of the base substrate, and the cover substrate having at least one substantially planar surface;

apposing the substantially planar surfaces of the base substrate and the cover substrate;

pressing the apposed surfaces of the base substrate and the cover substrate together and heating to a temperature above the glass transition temperature of the polymeric material of the base substrate for a time sufficient to bond the surfaces together without deforming the at least one microchannel; and

reducing the temperature of the bonded base substrate and cover substrate so that a stress free and sealed interface is formed.

33. (New) The method of claim 32 wherein said temperature is 2-5° C above said glass transition temperature.

34. (New) The method of claim 33 wherein said base substrate and said cover substrate are each made of polymethylmethacrylate.

Respectfully submitted,

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